

ence of the ray alone, disappeared completely giving the patient over three years of health and happiness.

While it is necessary to class these cases as ultimate failures yet I think that the results obtained more than compensated both physician and patient for the trouble of taking a few painless treatments. A number of other similar cases have shown no tendency to recurrence. Neither of the cases which recurred was subjected to anti-operative treatments. In both, postoperative radiation was begun only when the appearance of marked recurrence forced the adoption of some method of treatment whereon the surgeons announced their inability to confer any further benefit by operative procedure.

If the x-ray is to be employed in a manner to cast credit on it as an aid in the treatment of this class of cases, anti-operative radiation must be insisted on, but if refused, postoperative radiation must be begun coincident with the beginning of recurrence at the latest, and, when the surgeon will consent, should be employed before recurrence has manifested itself, preferably the tenth day after operation. In every such case the mediastinum as well as the site of operation must be rayed.

In no case of primary carcinoma submitted to radiation without operation has recurrence manifested itself, but it must be remembered that in every such case the primary growth had advanced so little that the patient was unwilling to admit the necessity of operation. I am unwilling to believe that the satisfactory result in these cases was due to the absence of operative procedure but attribute it to the primary nature of the growth and the absence of metastasis at the time of the institution of Roentgen treatment.

During the year repeated and renewed evidence has appeared of the actual value of the ray in producing retrograde change in carcinomatous tissue. The adoption of the method of filtration founded on principles established by Roentgen and Walter applied first as a therapeutic aid and its value, proven clinically and experimentally by Pfahler of Philadelphia, has resulted, in simplifying the technic and permitting the administration of much heavier doses with consequent increase in the quickness of response of the disease to the ray. The experience of the past year has been thoroughly satisfactory.

#### GROWING INTEREST IN RADIOTHERAPY.

The incredulity and antagonism of certain members of the profession in spite of the misleading contradictory reports circulated by the class of observers referred to has shown a marked decrease. The profession in general are manifesting a healthy interest in the possibilities of Roentgen therapy and are beginning to ask intelligent questions thereby making the opportunity for explanation and conviction. It should be the duty during the next year, of every Roentgenologist to perfect himself in the technic of the treatment of carcinoma; to satisfy himself as to the exact value to be given the method as practiced by himself. Extreme conservatism combined with healthy investigation and repeated observation is necessary in order that we may arrive at a true determination of the exact value of this agent in this disease.

Primary carcinoma of the breast should be treated by the ray alone only when the condition or age of the patient presents a strong argument against preliminary operation. The inherent fear of surgery which so many of these patients present must not be permitted to act on our sympathies or bias our judgment but the treat-

ment of primary cases must only be undertaken for good and sufficient reasons.

Free discussion of these problems with the surgeons when the Roentgenologist shows his freedom from prejudice is usually productive of good since when the surgeons become convinced of the actual value of the ray in preventing or retarding metastasis, they will insist that their operation be aided by such prophylactic measure.

Bold assertions of the ability of the ray to cure carcinoma wherever situated without recourse to surgery carry not conviction but contempt to the majority of the hearers and it must be remembered that an assertion of fact and a demonstration of fact are two widely different things.

While I am daily more convinced of the actual assistance which the ray is capable of affording in the treatment of carcinoma I am also more than ever certain that extreme conservatism of statement combined with practical demonstration of actual result is the best way to convince the profession of the ultimate value of radiotherapy intelligently administered as an aid to surgery, not a substitute in the treatment of carcinoma.

#### CONCLUSIONS.

1. Results are better and more permanent, the earlier treatment is instituted.
2. The value of postoperative radiation has become more and more apparent.
3. Mediastinal recurrence while grave is not a death warrant.
4. Technic is not an accomplishment but an absolute necessity.
5. No tube is too good to use for treatment.
6. Filters are a necessity in the treatment of cancer of the breast.
7. Treat no case that you know can be cured surgically.

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## MISTAKES IN THE DIAGNOSIS OF PULMONARY TUBERCULOSIS.\*

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The possibility of limiting tuberculosis rests on our ability either to cure those infected or to prevent the infection of others. What we accomplish in both these fields depends very largely on an early diagnosis of the disease. That persons having pulmonary tuberculosis frequently fail to consult a physician in an early stage of the disease and that physicians frequently fail to diagnose early cases that are presented are well-known facts. How often and for how long a period patients are negligent of their symptoms and how often and for what reasons physicians actually fail to diagnose their cases are not so well understood. Among English writers who have recently called attention to the mistakes tabulated in this article are:

BRONCHITIS: Trudeau,<sup>1</sup> Butler,<sup>2</sup> Miner,<sup>3</sup> Landis,<sup>4</sup> Norris,<sup>5</sup> Mohr,<sup>6</sup> Pryor.<sup>7</sup>

\* Read before the Rhode Island Medical Society, Sept. 6, 1906.  
1. Trans. Association American Physicians, 1901.  
2. "Diagnosis of Internal Medicine," 1902, pp. 709 and 837.  
3. Penna. Med. Jour., July, 1903.  
4. Med. News, Sept. 17, 1904.  
5. Med. News, Sept. 17, 1904.  
6. Mobile Med. and Surg. Jour., October, 1904.  
7. Med. Record, Nov. 25, 1905.

GRIPPE: Bonney,<sup>8</sup> Trudeau,<sup>1</sup> Koch,<sup>9</sup> Hatfield,<sup>10</sup> Norris,<sup>5</sup> Pryor,<sup>7</sup>  
HEMOPTYSIS: Wells,<sup>11</sup> Barbour,<sup>12</sup> Whittaker,<sup>13</sup> von Ruck,<sup>14</sup>  
Trudeau,<sup>1</sup> Bonney,<sup>8</sup> Loomis,<sup>15</sup> Thompson,<sup>16</sup> Janeway,<sup>17</sup> Cattle,<sup>18</sup>  
Norris,<sup>5</sup> Cheney,<sup>19</sup> and Pryor.<sup>7</sup>

LARYNGITIS: Chappell,<sup>20</sup> and Harland.<sup>21</sup>

MALARIA: Tyson,<sup>22</sup> von Ruck,<sup>14</sup> Trudeau,<sup>1</sup> Butler,<sup>2</sup> Miner,<sup>3</sup>  
Hatfield,<sup>10</sup> Norris,<sup>5</sup> and Pryor.<sup>7</sup>

MITRAL STENOSIS: Barbour,<sup>12</sup> Landis,<sup>4</sup> and Norris.<sup>5</sup>

PNEUMONIA: Bergtold,<sup>23</sup> Janeway,<sup>24</sup> and Norris.<sup>5</sup>

The statistical material which forms the basis of this article was derived from the histories of 200 consecutive cases of pulmonary tuberculosis admitted to the State Sanatorium for Consumptives during the past year. The histories of 27 were excluded because for various reasons the patients' statements were considered unreliable. Eight other histories were excluded because they were incomplete, leaving 165 histories available. Of these 165 cases, tubercle bacilli were present in the sputum in 146. Of 19 cases in which the bacilli were not found, ten reacted to tuberculin, and in the remaining nine the physical signs were held to be sufficient for diagnosis without the tuberculin test. The following questions were asked:

1. When did you have your first lung symptom?
2. When did you first visit a physician?
3. When did you have your first hemorrhage, if any?
4. Were your lungs examined, and when?
5. Was your sputum examined, and when?
6. What diagnosis was given you at this first visit?
7. When did the physician inform you that you had consumption or tuberculosis?
8. When did you commence to have frequent expectoration?

The dates recorded were the year and calendar month and the evidence was carefully sifted to make sure that tuberculosis existed at the first visit to the physician, and the physicians were in all cases given the full benefit of any doubt in the matter of dates. In all diseases part of the responsibility of an early diagnosis is borne by the patient, but in pulmonary tuberculosis this responsibility is particularly heavy. Unless patients go to the physician early they can not receive an early diagnosis.

TABLE 1.

Delay of the Patient. Period Elapsed from the First Symptom to First Consultation of Physician.

Of 165 cases there was delay in 84 cases, or 50.9 per cent.

Period of delay was:

2 to 6 months in 60 cases, or 71.4 per cent.
6 to 12 months in 7 cases, or 8.3 per cent.
Over 12 months in 17 cases, or 20.2 per cent.
The longest delay was..... 72 months.
The shortest delay was..... 1 month.
The average delay was..... 7.9 months.

These figures emphasize the need of an organized method of informing all the people of the symptoms of early tuberculosis, the methods of preventing infection and of the insidious advance of tuberculous disease in apparently healthy people. It is doubtful whether this work will ever be well done unless it can be made a part

of the instruction in hygiene in the public schools. I turn now from mistakes of patients to mistakes of physicians.

TABLE 2.

Cases diagnosed throat trouble.  
Of 165 cases this mistake occurred in 4, or 2.4 per cent.  
Resulting delay in correct diagnosis was:

2 to 6 months in.....	1 case.
6 to 12 months in.....	1 case.
Over 12 months in.....	2 cases.
The longest delay was.....	24 months.
The shortest delay was.....	3 months.
The average delay was.....	11.5 months.

In two cases the uvulas were amputated, and in one case the tonsils were excised after the onset of continuous lung symptoms. In these three cases last named, the cough was evidently supposed to be the result of pharyngeal irritation.

TABLE 3.

Cases diagnosed malaria.  
Of 165 cases this mistake occurred in 5, or 3 per cent.  
Resulting delay in correct diagnosis was:

2 to 6 months in.....	3 cases.
6 to 12 months in.....	1 case.
Over 12 months in.....	1 case.
The longest delay was.....	18 months.
The shortest delay was.....	3 months.
The average delay was.....	7 months.

No blood examinations had been made in these cases.

TABLE 4.

Showing Frequency of Chills and Sweats Previous to Admission.  
Of 165 cases the patients in

22, or 13.3 per cent., had sweats alone.
11, or 6.6 per cent., had chills alone.
69, or 41.8 per cent., had both chills and sweats.
62, or 37 per cent., had neither chills nor sweats.

Of 165 cases, 35 (21.2 per cent.) patients claimed to have had malaria previous to the onset of tuberculosis. The great majority of these attacks were probably tuberculous, but the cases in Table 3 were the only ones that had been diagnosed malaria by a physician after the onset of continuous lung symptoms. Chills, fever and sweats occasionally occur in tuberculosis with sufficient regularity to suggest malaria, and so long as malaria is diagnosed without blood examinations it seems inevitable that some cases of tuberculosis will be called malaria, the number of these mistakes varying in different localities, their frequency depending largely on the prevalence of true malaria.

TABLE 5.

Failure of Diagnosis. Lungs not Examined.  
Of 66 cases this mistake occurred in 8, or 12.1 per cent.  
The delay in correct diagnosis was:

2 to 6 months in.....	7 cases.
6 to 12 months in.....	0 cases.
Over 12 months in.....	1 case.
The longest delay was.....	20 months.
The shortest delay was.....	2 months.
The average delay was.....	5.1 months.

The above table is probably made up largely of cases in which the physician was deceived by the healthy appearance of the patient.

TABLE 6.

Lungs Examined and Pronounced Sound.  
Of 165 cases this mistake occurred in 30, or 18.1 per cent.  
Resulting delay in correct diagnosis was:

2 to 6 months in.....	13 cases.
6 to 12 months in.....	7 cases.
Over 12 months in.....	10 cases.
The longest delay was.....	96 months.
The shortest delay was.....	2 months.
The average delay was.....	9.3 months.

In twelve of these thirty cases there was a history of consumption in the family. Careful histories are scarcely second in diagnostic importance to careful physical examinations. Those who have had relatives die of consumption often furnish the best opportunity for early diagnosis, as they are suspicious of their symptoms and come to the physician early. A small lesion in so large an organ as the lung can readily be missed by the most expert examiner, especially if such lesion be deeply seated. In 5 per cent. of all patients admitted to the sanatorium, tuberculosis could not be positively demonstrated by physical examination alone. In a patient

8. Boston Med. and Surg. Jour., Sept. 16, 1897.
9. Trans. British Congress on Tuberculosis, iii, p. 94.
10. Med. News, Sept. 17, 1904.
11. Medical News, Sept. 21, 1895.
12. Med. Record, 1896, pp. 829-833.
13. Trans. Association of American Physicians, 1897.
14. Virginia Medical Monthly, July 23, 1897.
15. Med. Record, May 21, 1898.
16. Lancet, London, Jan. 24, 1903.
17. Med. Record, April 25, 1903.
18. The Practitioner, London, February, 1904.
19. Am. Medicine, Oct. 22, 1904.
20. THE JOURNAL A. M. A., Feb. 21, 1903.
21. Am. Medicine, June 25, 1904.
22. "Practice of Medicine," 1896, p. 66.
23. Am. Medicine, June 22, 1901.
24. Trans. British Congress on Tuberculosis, iii, p. 213.

who has lung symptoms, with or without physical signs, no physician, however skilful, is warranted in stating that the lungs are free from tuberculosis, unless the patient fails to react to tuberculin.

TABLE 7.

Cases with Expectoration at the Time of First Consulting the Physician in which there was a Failure in Diagnosis Accompanied by a Failure to Examine the Sputum.

Of 165 cases this mistake occurred in 31, or 18.7 per cent.  
The delay in correct diagnosis was:

2 to 6 months in.....	18 cases.
6 to 12 months in.....	7 cases.
Over 12 months in.....	6 cases.
The longest delay was.....	96 months.
The shortest delay was.....	2 months.
The average delay was.....	10.3 months.

If sputum examinations were made as a routine in all patients whose sputum could be obtained, many unsuspected cases of tuberculosis would doubtless be discovered.

TABLE 8.

Cases Diagnosed Grippe.

Of 165 cases this mistake occurred in 24, or 14.5 per cent.  
Resulting delay in correct diagnosis was:

2 to 6 months in.....	14 cases.
6 to 12 months in.....	5 cases.
Over 12 months in.....	5 cases.
The longest delay was.....	120 months.
The shortest delay was.....	2 months.
The average delay was.....	10.8 months.

Of all cases, the patients in 25 per cent. had had grippe previous to the onset of tuberculosis. The physicians were credited with a mistake only in those cases in which they had diagnosed grippe after the onset of continuous lung symptoms. Tubercle bacilli were found in the sputum of all these cases. The possibility that some of these patients may really have had grippe in addition to tuberculosis at the time of visiting the physician is remote. Such a question is not likely to be raised by one accustomed to take tuberculous histories.

If it were better understood that patients with early tuberculosis in apparent good health are subject to febrile attacks closely simulating grippe or bronchitis many cases of tuberculosis masquerading as grippe would be detected by the history alone. Many more cases would doubtless be detected if sputum examinations were made whenever possible in supposedly grippe cases. It is characteristic of grippe to occur in epidemics and isolated cases should be viewed with suspicion. Finally, the tuberculin test must be appealed to in doubtful cases.

TABLE 9.

Cases Diagnosed Bronchitis.

Of 165 cases this mistake occurred in 24, or 14.5 per cent.  
Resulting delay in correct diagnosis was:

2 to 6 months in.....	15 cases.
6 to 12 months in.....	5 cases.
Over 12 months in.....	4 cases.
The longest delay was.....	96 months.
The shortest delay was.....	2 months.
The average delay was.....	10.6 months.

It has been a far too frequent practice to assume bronchitis to be non-tuberculous as long as the patient's general health remains good. It has also been customary in many doubtful cases to keep the patient under observation until repeated examinations should settle the diagnosis, but the diagnosis should not be delayed until made possible by the appearance of pronounced signs. Waiting for diagnostic signs to appear is usually equivalent to waiting for the disease to progress and is not sound medical policy when other means are at hand.

Chronic non-tuberculous bronchitis occurs frequently at the two extremes of life, in asthmatics, in alcoholics, and in those whose occupations are etiologic factors, but chronic bronchitis when occurring in a young or middle-aged adult without a definite cause should be considered tuberculous unless proven otherwise. In any supposed

case of chronic non-tuberculous bronchitis in which the diagnosis appears doubtful after one month's observation by a physician, the tuberculin test should be resorted to.

TABLE 10.

Failure of Diagnosis in Patients Who Spat Blood Previous to or During the First Visit of a Physician.

Of 165 cases this mistake occurred in 21, or 12.7 per cent.  
Resulting delay in correct diagnosis was:

2 to 6 months in.....	8 cases.
6 to 12 months in.....	4 cases.
Over 12 months in.....	9 cases.
The longest delay was.....	96 months.
The shortest delay was.....	2 months.
The average delay was.....	17.7 months.

The probability that the blood came from the lungs in all these cases is so great that no other supposition can be seriously considered. In many cases of pulmonary tuberculosis, hemoptysis is the first symptom. This was true of 25 cases (15.1 per cent.) of the total number considered. To fail to diagnose tuberculosis after hemoptysis is an error which occurs with surprising frequency, as shown in Table 10. It is a particularly costly error because many of these cases are at such an early period of the disease that tuberculosis would not otherwise be suspected. In several of these cases the patients were told that the blood came from the throat or stomach; some do not cough before, during or immediately after the hemorrhage, the blood simply "comes in the mouth," to use the patient's expression, without other symptoms. In but four cases could a history of thorough examination of the upper air passages be obtained, although it was sought for in all cases.

Hemoptysis from heart lesions or from lung lesions, other than tuberculosis, is so comparatively rare that all pulmonary hemorrhages should be assumed to be tuberculous until proven otherwise. This rule holds good even after an injury. In two cases in Table 10 an injury to the chest was the immediate cause of the hemorrhage. Loomis<sup>15</sup> quotes Stricker (900 cases of hemoptysis in the German army), who shows that 50 per cent. of all cases of hemoptysis following injury are succeeded by tuberculosis. If uncompensated organic valve lesion be absent, the lungs apparently clear on physical examination and the upper air passages free from bleeding points, the case should be considered pulmonary tuberculosis unless it fails to react to tuberculin. To wait for physical signs or additional symptoms to appear is disastrous, as they frequently do not develop for many months, during which time the patient's chances of a cure will diminish or disappear.

TABLE 11.

Patients Kept in Ignorance of the Correct Diagnosis, which is Made by the Physician at Once.

Of 165 cases this mistake occurred in 4, or 2.4 per cent.  
Resulting delay in correct diagnosis was:

2 to 6 months in.....	2 cases.
6 to 12 months in.....	1 case.
Over 12 months in.....	1 case.
The longest delay was.....	24 months.
The shortest delay was.....	2 months.
The average delay was.....	9 months.

It is to be regretted that the practice of keeping consumptives in ignorance of their true condition has not entirely disappeared. As a patient can be kept from infecting others only when he understands the nature of his disease, it is not right to deprive the community of the protection thus afforded. When consumptives were considered incurable the policy of deceiving the patient could be partially justified on the ground that if the person was doomed it could be of no advantage to learn of it a long time beforehand. Now that consumption is known to be curable, to withhold the diagnosis is to deliberately sacrifice chances of recovery, and it is difficult to speak of such a practice without showing some of that

bitterness which patients themselves feel who have been thus deceived. Two prominent excuses are:

First.—It is said that a person is poor, has a family to support, can not make those changes in his life which a proper treatment necessitates and that, therefore, if he must succumb he had better do it undiscouraged by a gloomy diagnosis. These patients, however hopeless because of poverty, family responsibilities and unfavorable environment, if informed of their disease, often receive, in addition to free treatment in a sanatorium, unlooked for aid from friends and charitable organizations and are thus saved from what seemed the inevitable.

Second.—It is said the diagnosis results in a shock to the patient which injures the health. Of 161 cases in which the mental effect of the diagnosis of pulmonary tuberculosis was recorded 82 patients (50.9 per cent.) were unaffected, 72 (44.7 per cent.) were temporarily depressed and 7 (4.2 per cent.) were continuously depressed after the diagnosis. It goes without saying that of the unaffected patients a large proportion considered the diagnosis unpleasant, but it was received philosophically. The cases recorded "depressed" were those in which the patients evinced some emotional disturbance, weeping, lack of sleep, or sufficient worry to annoy the patient temporarily. Seven (4.2 per cent.) were continuously depressed after learning the diagnosis. Five of these were far advanced. They failed rapidly and seemed to have so much insight into their condition that their depression was logical. The remaining two were advanced, and they gained as rapidly as could be expected from their condition. Of the four cases in which the diagnosis was withheld for fear of a shock and injury to the patients' health, no appreciable depression resulted from the diagnosis. To sum it all up, there is no evidence to show that there is any risk whatever in informing tuberculous patients of the nature of their disease.

TABLE 12.

## Miscellaneous Mistakes.

Of 165 cases there were 9, or 5.4 per cent.  
Out of these 9

5 were given no opinion.  
2 were diagnosed "cold."  
2 were told to "build up."

Resulting delay in correct diagnosis was:

2 to 6 months in..... 5 cases.  
6 to 12 months in..... 2 cases.  
Over 12 months in..... 2 cases.  
The longest delay was..... 18 months.  
The shortest delay was..... 2 months.  
The average delay was..... 6.6 months.

It is probable that the relative proportion of the different mistakes varies in different localities, depending somewhat on the prevalence of those diseases which tuberculosis simulates and somewhat on local custom in the diagnosis of doubtful cases. In many cases diagnosed pleurisy the lung is doubtless invaded. Of 165 cases, 18 (10.9 per cent.) gave a history of pleurisy previous to the development of continuous lung symptoms. Thompson obtained a history of pleurisy in 25 per cent. of 170 cases. Febrile attacks in tuberculous individuals are too frequently diagnosed pneumonia. Of 165 cases, 14 (8.4 per cent.) gave a history of pneumonia averaging 11.8 years before the recognized onset of tuberculosis. Seven additional cases (4.2 per cent.) were diagnosed pneumonia at the onset of continuous lung symptoms. Bergtold<sup>23</sup> obtained a history of pneumonia of a suspicious type at the onset of tuberculosis in 13 per cent. of 193 cases. Most of these so-called pneumonias are undoubtedly tuberculous, although there is a possibility that non-tuberculous pneumonia may have immediately

preceded the tuberculous infection. Finally, a non-tuberculous bronchopneumonia occasionally coexists with tuberculosis, as has been pointed out by Janeway.

TABLE 13.

Total Number of Cases in which Mistakes were Made and Resulting Delay in Months.

Of 165 cases there were  
89 cases, or 53.9 per cent. correctly diagnosed.  
76 cases, or 46 per cent. incorrectly diagnosed.  
Of the 76 cases the resulting delay in correct diagnosis was:  
2 to 6 months in..... 41 cases.  
6 to 12 months in..... 15 cases.  
Over 12 months in..... 20 cases.  
The longest delay was..... 120 months.  
The shortest delay was..... 2 months.  
The average delay was..... 11.3 months.

TABLE 14.

Physical Condition on Admission of Patients Whose Cases Were Correctly Diagnosed, Classified According to the Plan Adopted by the National Association for the Study and Prevention of Tuberculosis.

Incipient cases, 15, or 16.8 per cent.  
Advanced cases, 60, or 67.4 per cent.  
Far advanced cases, 14, or 15.7 per cent.

TABLE 15.

Physical Condition on Admission of Patients Whose Cases Were Incorrectly Diagnosed.

Incipient cases, 6, or 7.8 per cent.  
Advanced cases, 58, or 76.3 per cent.  
Far advanced cases, 12, or 15.7 per cent.

In the majority of the 76 cases in the incorrect column more than one mistake had been made, so that the total number of mistakes greatly exceeded the number of cases. From the above tables it appears that only half as many incipient cases are obtained from the patients on whom mistakes in diagnosis have been made as from those patients who have been diagnosed at once. The inference that, because of the 11 months' delay in diagnosis on patients in Table 13 some of the incipient cases have become advanced, seems warranted.

Some of the mistakes recorded in the foregoing tables are best described as carelessness, yet it seemed probable that a large number of mistakes on early cases were due to the physician being taken off his guard by the healthy appearance of the patients. The typical appearance of advanced consumptives is so deeply impressed on both physician and layman that they are slow to suspect tuberculosis in any one of robust appearance. Patients with early and curable lesions frequently look a little tired or worn, but very rarely "consumptive." In Table 16 the physical appearance on admission of 191 patients has been classified as "healthy," "worn" or "consumptive." In those classified as "healthy" one would not have suspected ill-health from the appearance. Those classified as "worn" had a tired look about the face as though they were overworked or had not been sleeping well, and those classified as "consumptive" had sufficient pallor or emaciation to suggest consumption, although in many cases the picture was by no means typical.

TABLE 16.

Showing Appearance of Patients on Admission, Whether Healthy or not, Classified According to Physical Condition.

Of 21 incipient cases the appearance was:  
Healthy in 14 cases, or 66.6 per cent.  
Worn in 6 cases, or 28.5 per cent.  
Consumptive in 1 case, or 4.7 per cent.  
Of 134 advanced cases the appearance was:  
Healthy in 36 cases, or 26.8 per cent.  
Worn in 50 cases, or 37.3 per cent.  
Consumptive in 48 cases, or 35.8 per cent.  
Of 36 far advanced cases the appearance was:  
Healthy in 1 case, or 2.7 per cent.  
Worn in 1 case, or 2.7 per cent.  
Consumptive in 34 cases, or 94.4 per cent.  
Summary of patients' appearance:  
Of 191 cases the appearance was:  
Healthy in 50 cases, or 26.1 per cent.  
Worn in 56 cases, or 29.3 per cent.  
Consumptive in 85 cases, or 44.5 per cent.

The diagnosis of pulmonary tuberculosis in people who look well or a little worn, rather than in those people whose physical appearance would indicate consumption, is the diagnosis of most value both to the patient and the community. In cases in which the diagnosis is in doubt it is sometimes possible to institute an open-air régime during the period of uncertainty, in the hope that if the case is finally found to be tuberculous no time will be lost. It so rarely happens, however, that a patient will take treatment conscientiously until a positive diagnosis is made that this method of temporizing is impracticable. It is not usually necessary for the specialist to use tuberculin, because he sees few cases that have not been subjected to the waiting policy either of the patient or physician, but if we are to abandon this waiting policy then tuberculin is at present essential, because without its use many incipient cases of pulmonary tuberculosis can not be promptly diagnosed. In a patient who has symptoms or signs of pulmonary disease the possibility that a tuberculin reaction may be due to an extra-pulmonary lesion is so remote that it may safely be disregarded.

That there is sometimes difficulty in having the temperature taken every three or four hours for the tuberculin test is appreciated; in those who can afford a nurse for a few days this difficulty is easily disposed of. The taking of the temperature in test cases might properly be made a part of the duties of district nurses. Sanatoriums are only too glad to test doubtful cases which can not be diagnosed at home. Patients who refuse the test relieve the physician of further responsibility. In judging of the accuracy of diagnosis from the above tables it may occur to any one that some patients may have purposely been given an incorrect diagnosis (grippe, bronchitis, etc.) to reassure them. This possibility may be admitted without affecting the general result, as it is only the correct diagnosis given the patient that is of value. Again, some patients do not return to the physician after the first visit, so that the latter does not have a fair opportunity to correct errors. In order to make full allowance for this possibility, 24 cases which had been given an incorrect diagnosis were struck out from the column of mistakes, because the mistakes were discovered within two months after the first visit to the physician. Some of these 24 cases thus placed in the correct column were of patients who had been given an incorrect diagnosis without an examination of the lungs. To place such cases in the correct column merely because the mistakes were discovered by some one else within two months seems very liberal, yet it was thought best to err on the safe side. The excluding of all mistakes, causing a delay of less than two months, allows sufficient time to diagnose doubtful cases and also a margin for slight inaccuracy of dates.

In regard to the reliability of patients' statements, it has been assumed that intelligent patients are competent to give evidence on prominent facts about their illness, concerning which there is no motive for misrepresentation. The opportunity of testing the accuracy of the statements of these patients has been afforded by the records of sputum examinations of the State Board of Health. Of 55 cases in which the dates of sputum examinations as given by the patients could be compared with the records of the State Board of Health, the year and month were given correctly in 46 cases. There was a variation of one month in 7 cases and a variation of more than one month in 2 cases. Since in these statistics all mistakes of less than two months have been ex-

cluded, 53 of the 55 patients were correct in their statements according to the standard employed, giving a percentage accuracy of 96.3.

#### CONCLUSION.

There can be no certainty that the patients admitted to the sanatorium fairly represent the whole number of tuberculous patients in the community in regard to their delay in consulting the physician or to the physician's delay in diagnosis. Inasmuch as the sanatorium does not accept the worst cases, it seems possible that it receives those who have been more wisely handled than the average of all tuberculous patients in the community. Whether or not histories of sanatorium patients, however accurate, can be a safe index of the mistakes in diagnosis in the community, the following summary of patients thus far admitted to the State Sanatorium is suggestive:

1. The presumable duration of the disease before admission averaging 15.4 months.
2. 50.9 per cent. have delayed consulting a physician, such delay averaging 7.9 months.
3. 2.4 per cent. have been diagnosed "throat trouble."
4. 3 per cent. have been diagnosed malaria.
5. 12.1 per cent. have been incorrectly diagnosed without an examination of the lungs.
6. 18.1 per cent. have had their lungs examined and pronounced sound.
7. 18.7 per cent. have been incorrectly diagnosed without an examination of the sputum (sputum being present).
8. 14.5 per cent. have been diagnosed grippe.
9. 14.5 per cent. have been diagnosed bronchitis.
10. 12.7 per cent. have not been correctly diagnosed after hemoptysis.
11. 2.4 per cent. have had the correct diagnosis purposely withheld from them by the physicians.
12. 5.4 per cent. have had unclassified mistakes in the diagnosis.
13. 46 per cent. have been incorrectly diagnosed, the resulting delay in correct diagnosis averaging 11.3 months.

This optimistic and fatal waiting policy should be sharply abandoned. The significance of hemoptysis should be appreciated. A tuberculous history should be sought for in all lung diseases, and in atypical and doubtful cases of grippe, bronchitis and malaria the diagnosis should be promptly made by tuberculin when other means fail. If the number of curable cases which a sanatorium receives is small, its usefulness is correspondingly limited, and our professional pride should not allow the willingness of the state to finance the treatment of curable cases to surpass our ability to furnish the cases.

### Clinical Notes

#### THE DEMONSTRATION OF SPIROCHÆTA PALLIDA IN LESIONS OF ACQUIRED SYPHILIS.\*

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Of the various methods employed to establish the etiologic relation of *Spirochæta pallida* to syphilis, those concerned with its demonstration in syphilitic tissue have received comparatively little attention.

The first positive findings are reported by Berterelli and Volpinio,<sup>1</sup> who examined the liver and spleen of children dying of hereditary syphilis. It was not until Levaditi, by modifying the Ramon y Cajal method for

\*Paper read and sections demonstrated before the Pathological Society of Philadelphia, Jan. 10, 1907.

1. Finger: Wiener Klin. Wochschr., 1906, vi.